

March 2015

## Comparisons of Hospitalizations for Selected Chronic Diseases by Alcohol Abuse Status, Montana, 2009-2013<sup>1</sup>

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*I tell you I am more afraid of King Alcohol than of all the bullets of the enemy.*

-Thomas Jonathan "Stonewall" Jackson

In 2013, 27.3% (95% Confidence Interval: 25.5% - 29.1%) of male Montana residents, and 14.2% (13.0% - 15.8%) of female Montana residents were binge drinkers; 7.9% (6.9% - 9.1%) of male residents and 7.5% of female residents were heavy drinkers.<sup>2</sup> Alcohol consumption, particularly binge drinking, is harmful to a number of body systems, including the brain, heart, liver, pancreas, digestive and immune systems.<sup>3</sup>

We tabulated inpatient admissions to Montana residents of legal drinking age (ages 21 years and over) in the Montana Hospital Discharge Data System from 2009 to 2013. We examined primary or secondary diagnosis codes for alcohol dependence syndrome, non-dependent alcohol abuse, and personal history of alcoholism.<sup>4</sup> We categorized inpatient admissions based on the following categories of primary diagnoses for chronic conditions: ischemic heart disease; episodic mood and schizophrenic disorders; esophageal, stomach, and duodenum disease; diabetes mellitus; diseases of the pancreas; malignant neoplasms of the lip, oral cavity, and pharynx, female breast, colon, and liver; and chronic liver disease and cirrhosis.

The category with the greatest number of admissions was ischemic heart disease, the least admissions were for chronic liver disease and cirrhosis. Personal history of alcohol abuse was rarely coded, reflecting a coding practice that instead codes remission.<sup>5</sup>

The category with the highest percentage of admissions with codes for alcohol dependence, abuse, or personal history was highest for chronic liver disease and cirrhosis (52.7%), followed by episodic mood and schizophrenic disorders (30.7%) and diseases of the pancreas (28.9%) (Figure 1). Because the codes for alcohol abuse and dependence are classified as part of episodic mood and schizophrenic disorders, some of these admissions are for direct treatment of alcohol dependence or abuse, others are for psychiatric conditions complicated by alcohol.

<sup>1</sup> The Montana Hospital Discharge Data System (MHDDS) receives annual de-identified hospital discharge data sets through a Memorandum of Agreement with the Montana Hospital Association. Most hospitals in Montana participate in voluntary reporting from their Uniform Billing forms, version 2004. The MHDDS receives information on more than 90% of inpatients admissions in the states. It does not receive data on emergency department visits or outpatient procedures at this time.

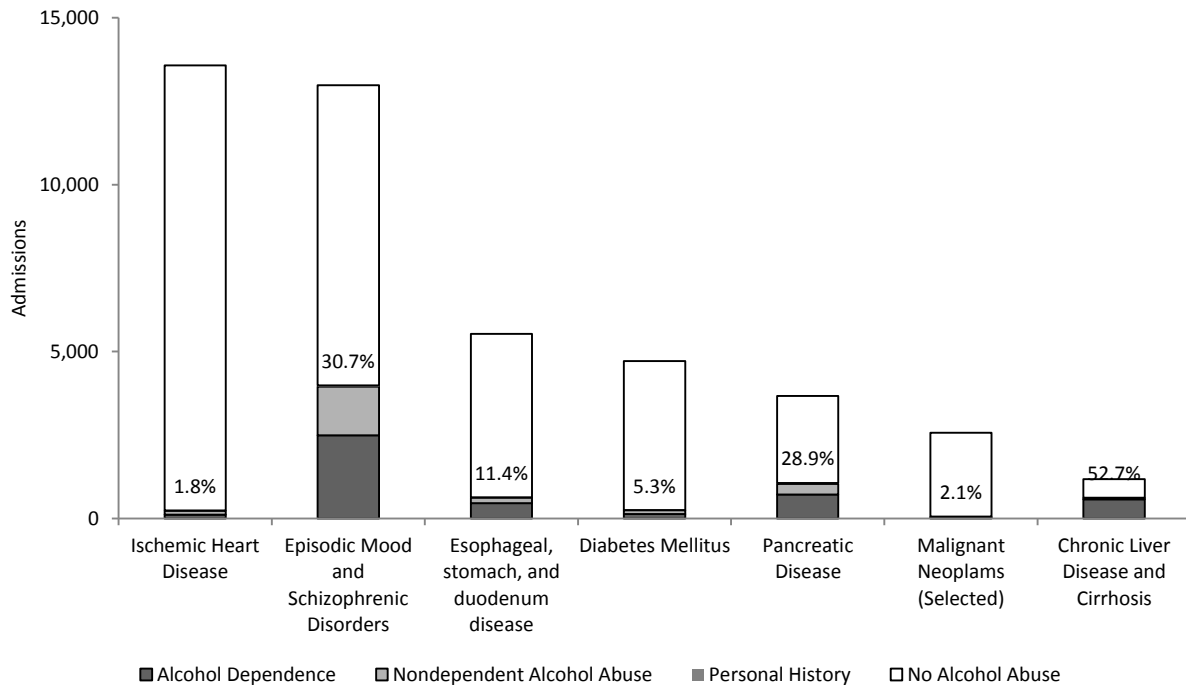
<sup>2</sup> Montana Behavioral Risk Factors Surveillance System, 2013, <http://brfss.mt.gov/Data/data.php>

<sup>3</sup> <http://www.niaaa.nih.gov/alcohol-health/alphabets-effects-body>

<sup>4</sup> alcohol dependence syndrome (ICD-9-CM: 303.xx), non-dependent alcohol abuse (ICD-9-CM: 305.0x), and personal history of alcoholism (ICD-9-CM: V11.3); <http://www.icd9data.com/>; <http://www.hcpro.com/REV-256557-7650/Alcohol-and-drug-addiction-recovery-month.html>

<sup>5</sup> Custis C 2013 Comparison of Hospitalizations for Selected Cardiovascular and Respiratory Disease by Tobacco Use Status, Montana, 2008-2011. Montana Hospital Discharge Data System; <https://www.aapc.com/MemberArea/forums/showthread.php?t=61004>

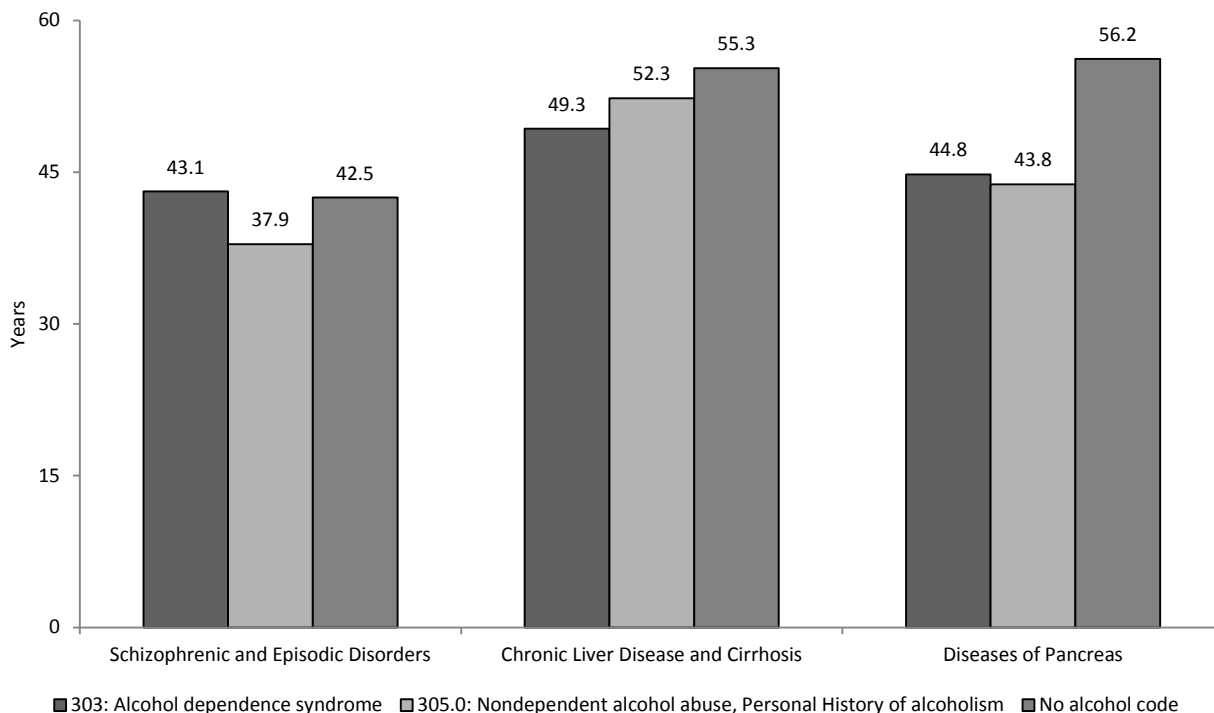
Figure 1. Number and Percent of Admissions with Indication of Alcohol Dependence or Abuse, Montana Hospital Discharge Data System



We compared the mean age of patients admitted for episodic mood and schizophrenic disorders, chronic liver disease and cirrhosis, and pancreatic disease, by alcohol abuse status (Figure 2). For the psychiatric conditions, mean age was not significantly different (at  $\alpha = .05$ ) for individuals admitted with alcohol dependence syndrome (43.1 years) and individuals admitted without alcohol dependence or abuse (42.5 years).<sup>6</sup> The mean age was statistically significantly lower for those admitted with non-dependent alcohol abuse (37.9 years) as compared to the other categories. For individuals admitted with chronic liver disease and cirrhosis, the mean age of admission for individuals with alcohol dependence syndrome was significantly lower (49.3 years) than the mean age of individuals admitted without alcohol dependence or abuse (55.3 years); other differences in age were not statistically significant. For individuals admitted with pancreatic disease, the mean ages for individuals with alcohol dependence (44.8 years) or abuse (43.8 years) were both significantly lower than those without alcohol dependence or abuse (56.2 years), but not statistically significantly different from each other.

<sup>6</sup> <http://support.sas.com/kb/45/428.html>

Figure 2. Mean Age for Admissions with Indication of Alcohol Dependence or Abuse, Montana Hospital Discharge Data System

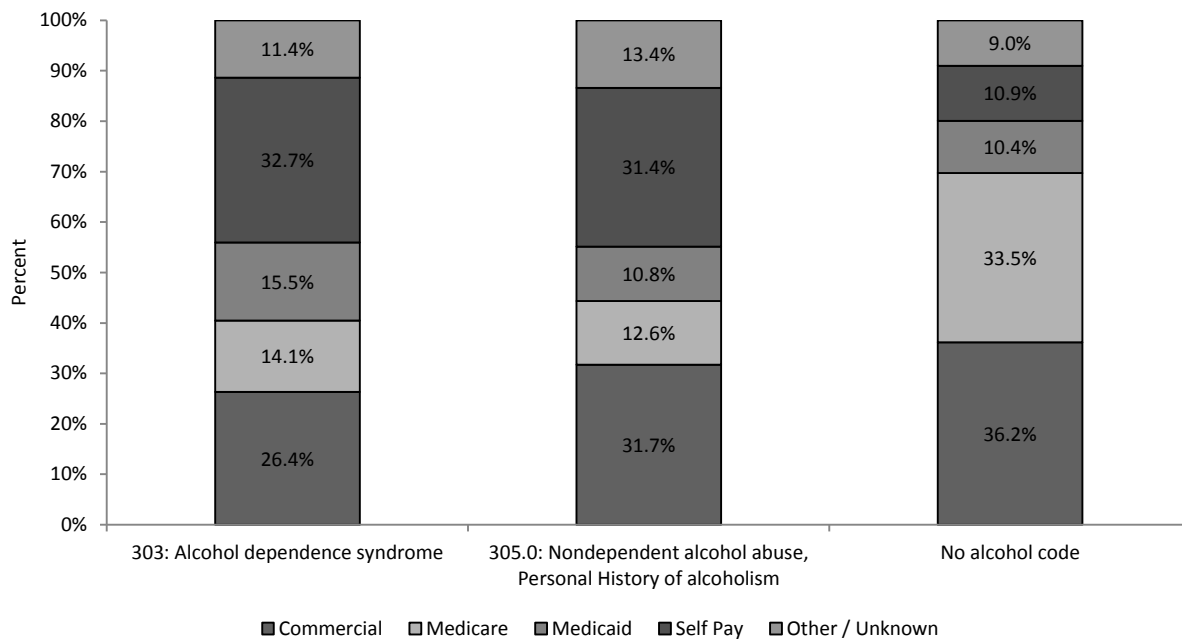


We also compared the mean age of patients admitted for ischemic heart disease and diabetes mellitus by alcohol status. Because the number and proportion of admissions with alcohol dependence or abuse was far lower (n=238, 1.8%; n=249, 5.3%) than for diseases of the pancreas and chronic liver disease and cirrhosis, we combined alcohol dependence, non-dependent alcohol abuse, and personal history of alcohol into a single category. The mean age of patients admitted for ischemic heart disease with alcohol abuse or dependence was significantly lower than that for patients without (59.7 years vs 67.7 years), as was the mean age for patients admitted with esophageal, stomach, and duodenum disease (51.9 years vs 63.9 years) or diabetes mellitus (43.6 years vs 53.2 years). Physicians determine if alcohol consumption is dependence or abuse; likewise, the physician also determines if the condition affects the patient's course of care.<sup>7</sup> As such, admissions for ischemic heart disease and diabetes mellitus coded with alcohol dependence or abuse may represent more severe dependence and abuse than admissions for conditions more commonly associated with alcohol dependence and abuse, such as chronic liver disease or pancreatic disease.

<sup>7</sup> <http://www.hcpro.com/REV-228472-6895/Understand-diagnosis-coding-to-protect-against-auditor-scrutiny.html>

Because individuals hospitalized for chronic liver disease, cirrhosis, or pancreatic disease with alcohol dependence and abuse are younger than those without dependence or abuse, a lower percentage of hospitalizations had Medicare as primary payer. Among those with dependence syndrome, a higher percentage were paid by Medicaid (15.5% vs 10.4%) than those without dependence or abuse; for both dependence and abuse, a much higher percentage were self pay (32.7% and 31.4% vs 10.9%) than individuals without alcohol dependence or abuse (Figure 3); many insurance companies consider alcohol dependence and abuse to be pre-existing conditions and deny coverage; because commercial carriers are unable to deny coverage for pre-existing conditions under the Affordable Care Act (ACA), the proportion of these hospitalizations paid by commercial carriers is expected to substantially increase as the provisions of the ACA are implemented, beginning in 2014.<sup>8</sup>

Figure 3. Percentage of Hospitalizations by Primary Payer and Alcohol Abuse Status, Hospitalizations with Primary Diagnosis of Chronic Liver Disease, Cirrhosis, or Pancreatic Disease, Montana Hospital Discharge Data System, 2009-2013



Individuals who depend on and abuse alcohol require hospitalization for chronic diseases such as chronic liver disease and cirrhosis, pancreatic disease, ischemic heart disease, and diabetes mellitus more than those who are not dependent. Admissions to these younger individuals are an especially preventable burden on the healthcare system.

For information about the Montana Hospital Discharge Data System, please contact Cody L Custis, Epidemiologist, Office of Epidemiology and Scientific Support, (406) 444-6947 or [ccustis@mt.gov](mailto:ccustis@mt.gov)

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Please visit our website at <http://dphhs.mt.gov/publichealth/Epidemiology/OESS-MHDDS>

<sup>8</sup> <http://www.livestrong.com/article/68656-preexisting-conditions-usually-denied-health/>; Families USA Foundation. 2010 *Health Reform: Help for American with Pre-Existing Conditions*; <http://aspe.hhs.gov/health/reports/2012/pre-existing/>